

[illegible]

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FIELD OF THE INVENTION

The present invention relates to educational processes, and particularly to the development of creative faculties for the composition of alphabetical, numerical, alphanumeric, literary, or other information.

BACKGROUND OF THE INVENTION

A great deal of effort is now devoted to applying the most effective methods in the teaching of young children. The recent explosion in computer and communications technology has served to accelerate these efforts. Nevertheless, there remain possible approaches to the problem that either have not been explored as fully as they should be, or else have not even been recognized or suggested.

SUMMARY OF THE INVENTION

According to the present invention information is made available in the form of a plurality or set of discrete segments, and a method is then provided for selecting various ones of the information segments in order to create an information body that did not exist before.

More specifically, the invention provides a set of information segments arranged into an input sequence. An information transfer location is then identified, and the input sequence of information segments is repetitively moved past the transfer location while visually displaying at least those

segments that are approaching the transfer location. Selected ones of the information segments are then copied as they arrive at the transfer location. The information segment copies are then arranged into an output sequence that constitutes a meaningful information body.

In accordance with the invention an "information segment" may be a digit, a subset of digits, or a number; a letter of the alphabet, a combination of letters, or a word; or any other representation of information that is capable of forming a building block from which a meaningful information body may be created. A "meaningful information body" may be a number, a word, a sentence, or the like.

Apparatus for carrying out the method of the invention preferably includes electronic devices such as light emitting diodes (LED's) for visually displaying the information segments, electronic circuit means for controlling the movement of the visually displayed information segments, control devices for controlling operation of the electronic circuit means, and manually operated selection means for actuating the copying of selected ones of the information segments as they arrive at the transfer location.

DETAILED DESCRIPTION

Referring now to Fig. 1, the sole drawing figure, the letters A, B, C, ... X, Y, Z of the alphabet are shown as being arranged in sequence around a circular path 10. An arrow 12 indicates that the letters of the alphabet rotate repetitively

along the circular path 10. An electronic control box 14 controls the starting, stopping, and speed of movement of the alphabetical characters around the circular path 10.

A line 20 represents an information transfer, or copying, location, which the alphabetical letters repeatedly pass as long as the movement continues. A control box 18 provides a selection of dwell time for each letter of the alphabet as it arrives at transfer location 20. That is to say, a selection may be made that each alphabetical letter is to pause for perhaps one second, or two seconds, or even five seconds, as it reaches the transfer location, allowing the operator a finite amount of time within which to accomplish the copying of that letter.

On the other hand, if the alphabet is moving relatively slowly, the operator may wish to reduce the dwell time^{essentially} to zero, making it necessary to copy each letter "on the fly", so to speak. This aspect of the operation may make it an exciting toy or game of skill, especially for young children.

Box 25 indicates the "select" button, which must be manually actuated to transfer each letter. Display area 30 at the top of the figure indicates that the operator has chosen to write the well known phrase:

"Now is the time for all good men to come to the aid
of the country."

However, the last five words of that sequence have not as yet been selected.

Although the circular path 10 does not specifically show the locations of spaces, it will be understood that any desired number of blank spaces may be included among the sequence of letters; or, for that matter, the "select" button 25 may be provided with a "double-click" type of action to create a space as desired.

While the illustration in Fig. 1 shows only the process of composing words from letters of the alphabet, it will be understood that the same process may be used to select digits to form numbers. Furthermore, the input sequence of information segments need not necessarily be arranged in a meaningful sequence, because according to the invention the significant feature is that the operator has the opportunity to make the appropriate selections so that the output sequence is meaningful.

Although Fig. 1 illustrates the movement of the letters of the alphabet around a circular path, the present invention is not thus restricted, because it is only necessary that the input sequence of information segments be repetitively moved past the information transfer location, with the segments approaching that location being visible to the operator so that he or she can make appropriate selections to create the output sequence constituting a meaningful information body.

As a further feature of the invention, provision may be made to review and correct the information body that constitutes the output.

EDUCATOR'S REPORT

The disclosure of the related Provisional Application, which was identical to the disclosure of this present application, was reviewed by a professional educator, Karalee S. Johnson, Ph. D. Dr. Johnson is employed by the public school system in Ventura County, California, as a Resource Specialist Teacher. Her report follows:

I have reviewed the provisional patent application for the "Educational Apparatus and Method for Composing Information" for possible educational use. There are at least three domains of learning in which use of this device, as described, could have educational value. The first would be in *motor skill development*, the second, in *reading acquisition*, and the third in *math computation*.

Motor skill development is important for a child's educational progress. Fine motor skills must be integrated with writing and math computation (Mercer & Mercer, 1998). Depending on the variety of ways words and/or alphanumerics are presented on the device, the apparatus could offer a novel way for children to practice printing as well as cursive. In this manner, children using the device would be developing fine motor skills as they copied letters, numbers, and/or words from the transfer location.

Visual motor skills are important for copying information, such as is required for note-taking in a classroom. Children who have difficulty developing their motor skills or who lack coordination (dyspraxia) often have difficulty writing legibly or taking efficient class notes. Children using this device would employ visual motor skills to copy what is presented at the transfer location. With repeated practice, students could improve the ease with which they are able to copy words and letters.

One difficulty some students have with handwriting is rate. Handwriting proficiency rates have been published for various grade levels (Mercer & Mercer, 1998). The speed control of the device allows children to challenge themselves to increase their copying speed. I am unaware of other game-type devices that encourage children to increase their grapheme-copying speed. This device might have value, then, particularly in a special education setting, where fine motor skill speed, particularly handwriting, is the instructional goal.

A second domain to consider for use of the apparatus is in the *acquisition of reading skills* for the emergent reader. A key step in learning to read is for students to learn the sound-symbol relationships of letters. One task in this complicated process is becoming familiar with the symbols of a given language. While learning to write letters is important, simply copying letters and words is of little value for children because they do not automatically attend to the associated sounds (Honig, 1996). However, if an auditory component was to be associated with the visual presentation, the product could have educational value for children to hear and speak letters as they see and write them.

Related to reading acquisition is the device's potential for assisting children in the development of phonemic awareness. (Use of this device for the development of phonemic awareness would require auditory feedback easily made available with cassette tapes designed to match whatever is being presented). Because one can "program" the material to be presented, the repetitive nature of the device could help students practice reading, writing, hearing, and speaking phonemic segments as well as rhyming sounds, all of which help to develop phonemic awareness so critical to reading development. With this device, the material to be presented can be specific to an individual student's learning needs.

A third domain to consider for use of the apparatus is in *math computation*. The device could be used to present math calculation problems including multiplication and division of whole numbers, fractions, geometric shapes, percents, proportions, algebraic equations, or even word problems. Instead of merely copying digits or symbols, a student could also calculate an answer for a problem presented on the device. A correction key, as allowed for in the application, would assist a student in self-correcting his or her work.

If used in a classroom, this device would make a great "learning center" item. A small group of children could be assigned to a table to use this device to practice skills they all need to improve. Students in this small group could work with relatively independently. Meanwhile, the teacher could then be available to another group to direct-teach some other topic.

Finally, in selecting instructional methods for children, one also must consider a child's learning style. Generally, the three basic learning styles are visual, kinesthetic, and auditory. This device would primarily appeal to learners who are largely visual

and/or kinesthetic. With the inclusion of an auditory component which is already available via any number of recording devices, this apparatus could integrate all three types of learning styles.

Basically, I see the potential to tailor instruction and the repetitive nature of the apparatus as educational strengths of this patent application and apparatus. These features are critical to teaching students and helping them to retain information. As an alternative learning tool to what is already available to students, this device has the potential to offer a stimulating presentation to assist in the "skill and drill" of learning.

Sincerely,

Karalee S. Johnson, Ph.D.
Resource Specialist Teacher

References

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Levine, Mel (1990). Keeping a Head in School. Cambridge: Educators Publishing Service, Inc. 297 pages.

Mercer, Cecil D. & A.R. Mercer (1998). Teaching Students with Learning Problems. Upper Saddle River: Prentice-Hall, Inc. 645 pages. ??

I Claim: